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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,923	05/03/2001	Paul S. Hahn	062891.0562	7109

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EXAMINER	
HSU, ALPUS	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/848,923	HAHN ET AL.	
	Examiner	Art Unit	
	Alpus H. Hsu	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,9-16,19-26,29 and 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-16,19-26,29 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/29/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6, 9-16, 19-26, 29 and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The sequences and logic of the newly claimed features of having "a method for managing time-sensitive packetized data streams at a receiver, comprising: receiving a time-sensitive packet of a data stream; comparing an energy level of a payload signal of the packet to an energy level of a payload signal of a previous packet; and either dropping or playing the packet based on the comparison" as in claim 1, "storing the packet in a buffer; and either dropping or playing the packet based on the comparison and a fullness of the buffer" as in claim 2, "determining whether to insert a filler packet based on the comparison and the fullness of the buffer as in claim 3, "analyzing the energy level of the payload signal of the packet comprises: determining a short term average energy of the payload signal; determining a noise floor estimate; and comparing the short term average energy and the noise floor estimate" as in claim 6, "determining whether to insert the filler packet comprises: determining if an underrun condition exists in the buffer; and determining if a previous packet can be repeated or if a new packet needs to be inserted" as in claim 9, and "determining whether an overflow condition exists in the buffer" as in claim 10, and the claimed features of a set of logic encoded in media for performing the method steps of claims 1-3, 6, 9 and 10 as in claims 11-13, 116, 19 and 20, and the claimed features of a system

comprising means for performing the functions of the method steps of claims 1-3, 6, 9 and 10 as in claims 21-23, 26, 29 and 30, all were not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

To be more specific, according to the detailed description of FIGURES 2-4 on pages 9-13 of the specification disclosure, it is the network interface 202 continuously receives packets that are part of a time-sensitive data stream sent through network 102. After network interface 202 receives a packet, the packet is directed to jitter buffer 214 with the help of RTP stack 212. **Host processor 204 then monitors jitter buffer 214 for fullness, i.e. detects overflow, overrun, and underrun conditions of jitter buffer 214**. Upon detecting one of these conditions, host processor 204 sets a state for jitter buffer 214 that is monitored by DSP 206. **If an overrun condition is detected by host processor 204, then DSP 206 determines whether or not the current packet can be dropped via speech analyzer 216 by analyzing the energy level of the payload signal of the packet. If an underrun condition is detected by host processor 204, then DSP 206 determines whether or not the current packet can be repeated via speech analyzer 216 by analyzing the energy level of the payload signal of the packet, or whether or not a comfort noise packet needs to be inserted via comfort noise generator 217**. Once DSP 206 determines whether the packet can be played, the packet is sent to codec 208 which converts the digital signals contained in the packet into analog signals that are useful to user interface 210. The analog signals are then sent to user interface 210, which generates output intelligible to a user of communication device 200. Filler packets and repeated packets are similarly processed (page 9, line 22 to page 10, line 9).

In the description of figure 3, it was stated that **the jitter buffer 214 stores packets that are received from network 102. DSP 206 retrieves the next packet to be played from jitter buffer 214 at step 300. An average jitter is determined at step 302. The determination in step 302 is a step that monitors the fullness of jitter buffer 214** (page 10, lines 23-26). **At decisional step 304, a determination is made by host processor 204 of whether an overflow condition exists in jitter buffer 214.** An overflow condition exists when jitter buffer 214 is full and cannot handle any more packets or is danger of overflowing. **If an overflow condition exists, then the retrieved packet is dropped at step 306** and the method proceeds again at step 300 as described above. **If an overflow condition does not exist, then a determination is made of whether an overrun condition exists in jitter buffer 214 at decisional step 308.** An overrun condition exists in jitter buffer 214 when the number of packets exceed a predefined threshold. In other words, packets are starting to buildup in jitter buffer 214, but an overflow condition does not yet exist. **If a determination is made at step 308 that an overrun condition does not exist then the packet is played at step 310.** Then, **at decisional step 312, a determination is made of whether an underrun condition exists.** An underrun condition exists in jitter buffer 214 when the number of packets are below a predefined threshold. In other words, jitter buffer 214 is being starved of packets. If an underrun condition does not exist then the method continues at step 300 as outlined above. However, **if an underrun condition does exist, then host processor 204 can either repeat the previous packet or insert a packet, such as a comfort noise packet generated by comfort noise generator 217. Host processor accomplishes this by determining, at step 314, whether the present packet can be repeated.** If the present packet can be repeated, then the packet is repeated at step 315 and the method

continues at step 300. If the present packet cannot be repeated, then a comfort noise packet is generated by comfort noise generator 217 and played at step 317 and the method continues at step 300 (page 11, lines 3-25). It was also stated that **at the decisional step 308, if an overrun condition exists in jitter buffer 214, then a determination is made of whether the next packet can be dropped at decisional step 316 by determining if the packet signifies a speech condition or a silence condition. If a determination is made that the next packet can be dropped, then the packet is dropped at step 318 before the method continues back at step 300. If a determination is made that the next packet cannot be dropped, the next packet is played at step 320 and the method continues back at step 300**. Decisional step 316 is facilitated by speech analyzer 216 of DSP 206, the details of which are described in conjunction with FIGUR.E 4 (page 11, line 26 to page 12, line 3).

In the description of figure 4, it was stated that **to determine whether a packet signifies a silence condition or a speech condition begins at step 400 where a payload signal within a received packet is analyzed**. Accordingly, **a short term average energy of the payload signal is determined at step 402 and a noise floor estimate is determined at step 404** (page 12, lines 7-10). **At step 405, which compares the short term average energy of the payload signal and the noise floor estimate**. Then, **at step 406, a determination is made of whether or not the packet is a no-speech packet**. If a determination is made that the packet is a no-speech packet, then the packet signifies a silence condition as denoted by box 416. For example, in a particular embodiment, when the short term average energy level of the payload signal is less than the noise floor estimate, then the packet signifies a silence condition. **If a determination is made at decisional step 406 that the packet is not a no-speech packet, then**

the payload signal information is stored at step 407 and a previous packet payload signal is retrieved from a history at step 408. The payload signal is then compared, at step 410, to the payload signal of the previous packet. Step 410 looks at the energy of each frequency band in each of the payload signals to determine if the two packets represent voice signals that are similar enough such that if the current packet was dropped, there is little or no impact on intelligibility to the user. Accordingly, **at decisional step 412, a determination is made of whether the current packet is necessary for QoS**. If yes, then the packet signifies a speech condition as illustrated by box 414. However, if not, then the packet signifies a silence condition as illustrated by box 416 (page 12, line 16 to page 13, line 2).

In other words, the newly claimed feature of having a method, logic, and system for managing time-sensitive packetized data streams at a receiver by "receiving a time-sensitive packet of a data stream; comparing an energy level of a payload signal of the packet to an energy level of a payload signal of a previous packet; and either dropping or playing the packet based on the comparison" as in claims 1, 11 and 21, "storing the packet in a buffer; and either dropping or playing the packet based on the comparison and a fullness of the buffer" as in claims 2, 12 and 22, "determining whether to insert a filler packet based on the comparison and the fullness of the buffer as in claims 3, 13 and 23, "analyzing the energy level of the payload signal of the packet comprises: determining a short term average energy of the payload signal; determining a noise floor estimate; and comparing the short term average energy and the noise floor estimate" as in claims 6, 16 and 26, "determining whether to insert the filler packet comprises: determining if an underrun condition exists in the buffer; and determining if a previous packet can be repeated or if a new packet needs to be inserted" as in claims 9, 19 and 29, and "determining whether an

overflow condition exists in the buffer" as in claims 10, 20 and 30, were not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention since it is **required** for the method, logic and system to be enabled when it is determined that **an overflow condition does not exist**, and **an overrun condition exists**, and **a payload signal within a received packet is analyzed, a short term average energy of the payload signal is determined, a noise floor estimate is determined**, and **the short term average energy of the payload signal and the noise floor estimate is compared to determine whether or not the packet is a no-speech packet**, before the energy levels of payload signals of current packet and previous packet can be compared to determine either to drop or play the packet. Furthermore, it is **required** for the method, logic and system to be enabled when it is determined that **an overflow condition does not exist**, and **an overrun condition does not exist and an underrun condition exists,** before the determination of whether the packet can be repeated or a filler packet is needed for playing.

3. In view of the 112, 1st paragraph problems as indicated above, there is no prior art can be applied for rejection purpose.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Raman and Cooke are further cited to show the comparison of energy level between data frames for differentiating between speech and noise similar to the newly claimed features which can be applied for prior art rejection in future prosecution.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alpus H. Hsu whose telephone number is (571)272-3146. The examiner can normally be reached on M-F (5:30-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D. Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AHH

Alpus H. Hsu
Primary Examiner
Art Unit 2665